

Approved Standards for Scientific Testimony and Reports for Haplotype DNA Testing

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1 INTRODUCTION

This document provides examples of statements related to haplotype DNA examinations (e.g., Y-STR or mitochondrial DNA) that are approved for reporting scientifically supported conclusions and expert opinions offered during testimony by Forensic Examiners within the FBI Laboratory's biology discipline, also called the DNA discipline. It is noted that these examples are not intended to be all inclusive and may be dependent upon the precedent set by the judge or locality in which a testimony is provided. Further, these examples are not intended to serve as precedent for other forensic laboratories and do not imply that statements by other forensic laboratories are incorrect, indefensible, or erroneous.

2 SCOPE

This document applies to Forensic Examiners who prepare an FBI *Laboratory Report* (7-1 or 7-1 LIMS) and/or provide testimony related to haplotype DNA examinations. This document applies to reports and to testimony based on reports that are finalized after its effective date.

3 RESPONSIBILITIES

- A. The Examiner will ensure that a *Laboratory Report* is consistent with the approved language contained within this document.
- B. The Examiner will ensure that his/her testimony related to haplotype DNA examinations is consistent with the standards contained within this document.
- C. The Technical Reviewer will ensure that a *Laboratory Report* contains language consistent with the standards contained within this document.
- D. An authorized evaluator will assess if testimony provided by DNA personnel complies with the statements contained within this document in accordance with the FBI Laboratory Quality Assurance Manual (LAB-100) section for monitoring of testimony related activities.

4 STATEMENTS APPROVED FOR FBI HAPLOTYPE TESTIMONY AND/OR LABORATORY REPORTS

4.1 Inclusion/Cannot Exclude/Match

The Examiner may state or imply that an inclusion is the determination that two haplotypes, generally one from an evidence sample and one from a reference sample, may have originated from the same source or lineage because the haplotypes are concordant. Within a *Laboratory Report* and during the course of testimony, an Examiner will further state or imply that an inclusion is not an identification because the lineage will share the haplotype and unrelated individuals may also share the haplotype. An inclusion will be supported by a statistical estimate (e.g., upper bound frequency estimate or likelihood ratio) and/or a qualitative statement.

When statistics are provided for haplotypic data, searches are performed in a population database to provide a likelihood ratio (LR). When the reported LR is >1, support for inclusion is reported.

A qualitative statement, which verbally describes the amount of support for the inclusion, is based on the LR and may be provided.

<u>Likelihood Ratio:</u>	<u>Qualitative Equivalent:</u>
≥ 1,000,000	Very strong support for Inclusion
10,000 to <1,000,000	Strong support for Inclusion
100 to <10,000	Moderate support for Inclusion
2 to <100	Limited support for Inclusion

A qualitative statement of inclusion which is not supported by a statistical calculation must be limited to situations in which the presence of an individual's DNA on an item is reasonably expected. The provenance of the sample must be established in the case record when statistics are not calculated.

4.1.1 Level of Certainty

An Examiner may state or imply a level of certainty in his/her calculation of the supporting statistic. The level of certainty is based on a 95% confidence interval.

4.2 Inconclusive or Uninformative

An Examiner may state or imply that no conclusion can be provided for a sample or for a comparison between haplotypes, generally those obtained from an evidentiary sample and a known reference sample. Such a conclusion is termed an inconclusive result and may be the consequence of an insufficient number of differences detected between two haplotypes to support an exclusion. When the reported LR is one, this conclusion is generally reported as uninformative.

4.3 Unsuitable Results

An Examiner may state or imply that the DNA typing results are not suitable for matching purposes when a Y-STR mixture cannot be attributed to individual contributors (i.e., the mixture is indistinguishable).

An Examiner may state or imply that the DNA typing results are not suitable for comparisons when a mitochondrial DNA profile indicates a mixture of two or more individuals.

4.4 Exclusion

An Examiner may state or imply that two haplotypes, generally one from an evidence sample and one from a reference sample, are excluded as originating from the same source or lineage when there are sufficient differences detected between the haplotypes (i.e., a visual exclusion).

4.5 Mixtures

An Examiner may state or imply that a mixture of DNA was obtained from an evidentiary sample. The minimum number of contributors to a Y-STR mixture may be provided in the report and stated during testimony.

4.6 Other Haplotype Conclusions

An Examiner may state or imply that no DNA typing results were obtained from the evidence or that no DNA typing results foreign to or unlike an individual whose DNA is reasonably expected to be present were obtained from the evidence.

An Examiner may state or imply that the DNA typing results obtained from the evidence are suitable for comparison purposes if no reference samples are available for comparison.

4.7 Error Rate

An Examiner may state or imply that the analytical processes and procedures used to support DNA typing technology do not have a calculable error rate due to the unpredictability of human error. An Examiner may further explain that the Laboratory has a quality system in place to minimize and/or identify potential procedural errors.

5 STATEMENTS NOT APPROVED FOR FBI HAPLOTYPE TESTIMONY AND/OR LABORATORY REPORTS

5.1 Absolute Identification

An Examiner may not state or imply that two matching haplotypes provide an absolute identification of the individual from whom the biological material originated.

5.2 Lineage Identification

An examiner may not state or imply that haplotype results can be used to provide absolute confirmation of lineage relatedness.

5.3 Racial/Ethnicity Prediction

An Examiner may not state or imply that haplotype results can be used to predict the specific population, racial, or ethnic group to which an individual belongs.

5.4 Zero Error Rate

An Examiner may not state or imply that forensic haplotype-based DNA examinations have a zero error rate or are infallible.

5.5 Reasonable Certainty

An examiner shall not use the expressions 'reasonable degree of scientific certainty,' 'reasonable scientific certainty,' or similar assertions of reasonable certainty in either reports or testimony unless required to do so by a judge or applicable law.

6 LABORATORY REPORT REVIEWS

The content of a *Laboratory Report* will be reviewed per the Level 1 documents and the DNA Level 2 documents to ensure compliance with the standards contained within this document.

7 TESTIMONY REVIEWS

Testimony provided by DNA staff will be reviewed in accordance with the Level 1 documents to ensure compliance with the standards contained within this document.

8 REFERENCES

United States. Department of Justice. Office of Legal Policy. Forensic Science. *Department of Justice Uniform Language for Testimony and Reports for the Forensic Mitochondrial DNA Examinations*. Retrieved from the Department of Justice Web site: <https://www.justice.gov/olp/uniform-language-testimony-and-reports>.

United States. Department of Justice. Office of Legal Policy. Forensic Science. *Department of Justice Uniform Language for Testimony and Reports for the Forensic Y-STR DNA Examinations*. Retrieved from the Department of Justice Web site: <https://www.justice.gov/olp/uniform-language-testimony-and-reports>.

9 REVISION HISTORY

Revision	Issue Date	Changes
00	09/01/2022	Reformatted DNA 711-2 into new template and assigned new Doc ID.
01	09/04/2024	Added the LR qualitative scale. Added the uninformative conclusion. Added limitation re: lineage identification.
02	12/16/2024	Added examples of haplotype exams to the intro. Revised LR statistic statement to apply to haplotypic data, not only Y-STRs